

Koichi KAWAMURA, et al.  
Appln. No. 10/810,657  
Amendment Under 37 CFR 1.114(c)

### **REMARKS**

Claims 17-33 are all the claims pending in the application. Claim 17 has been amended in order to more clearly point out features of the claimed invention. Support for the amendment may be found at, for example, the paragraph bridging pages 5 and 6 of the specification of the present application. No new matter has been introduced and entry of the amendment is respectfully requested.

#### **A. Rejection of Claims 17 and 33 Under 35 U.S.C. § 102**

Claims 17 and 33 have been rejected under 35 U.S.C. § 102(e), as allegedly being anticipated by U.S. Patent No. 6,585,574 to Lombardo *et al.* (“Lombardo”). Applicants respectfully traverse the rejection.

Lombardo was relied upon to disclose an abrasive pad comprising a hydrophobic polymer base material, wherein a hydrophilic group is added to a surface of the pad so that the surface is wettable to improve slurry distribution. Lombardo discloses “A polishing pad for use in chemical mechanical polishing (CMP), comprising: a pad surface for polishing wafer surfaces, the pad surface for polishing wafer surfaces, the pad surface being composed of a polymeric matrix material, the polymeric matrix material being hydrophobic; a polymeric additive being defined in the polymeric matrix of the pad surface and in cells of the pad surface, ....”

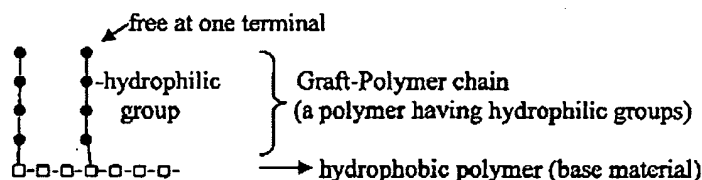
In contrast, the currently claimed invention of Claim 17 of the present application recites, in part, “the abrasive pad comprising (a) a base material comprised of a hydrophobic polymer and (b) a graft-polymer chain, wherein the polymer chain has a hydrophilic group and is directly bound to a principal polymer constituting the hydrophobic base material only at the terminal of

the polymer chain and the surface of the base material has a continuous hydrophilic region over the entire surface owing to a free terminal of the graft-polymer chain.”

There are distinctions in the structure of the claimed abrasive pad of the present invention and the structure of the pad of Lombardo. Currently presented Claim 17 shows more clearly the structural feature of the claimed invention. In the currently claimed abrasive pad of the instant application, the main chain of the hydrophobic polymer constituting the base material is provided with a branched molecular structure in which a polymer chain having a hydrophilic group is directly bound in a branched state, wherein the graft-polymer chain having a hydrophilic group is bonded to the principal polymer constituting the hydrophobic base material only at its terminal.

Therefore, the graft-polymer chain having a hydrophilic group has one free terminal, namely, in a less-constrained state, and therefore has high mobility in water or in a hydrated condition. Accordingly, it is considered that high mobility of the hydrophilic graft-polymer chain portion enables a high surface affinity and an internal water passage. See, e.g., the description on page 5, line 23 to page 6, line 10 of the specification of the instant application.

A structure of the pad of the present application may be depicted, for example, as follow:



It shows that the graft-polymer chain has a free terminal.

Lombardo does not disclose or suggest such a structural feature, and consequently, advantages of such a structure.

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Regarding Claim 33, which depends from Claim 17 and recites “the graft-polymer chain is additionally present inside the base material,” Applicants submit that the graft-polymer chains as recited in Claim 33 have the same structural feature as that of the graft-polymer chain as recited in Claim 17 and, accordingly, one terminal of the graft-polymer is free. Lombardo does not disclose this structure.

Accordingly, it is believed that the rejection of Claims 1 and 13 is not sustainable and it is respectfully requested that the rejection be withdrawn.

**B. Rejection of Claims 18-32 Under 35 U.S.C. § 103**

Claims 18-27 have been rejected under 35 U.S.C. § 103, as allegedly being obvious from Lombardo alone, and Claims 28-32 have been rejected under 35 U.S.C. § 103, as allegedly being obvious from Lombard in view of EP 1138438. Applicants respectfully traverse.

Lombardo was discussed above. EP 1138438 was relied upon to disclose a polishing pad having a cushioning layer of elastomer material.

As discussed above, the presently claimed Claim 17 of the instant application more clearly points out the structural features of the claimed abrasive pad, which are distinguished from Lombardo. EP 1138438 does not teach or suggest such structural feature of the presently claimed invention either. All of Claims 18-32 each depend directly or indirectly from Claim 17, and, thus, the rejections based on Lombard alone or in combination with EP 1138483 are unsustainable.

Accordingly, it is respectfully requested that the rejections under section 103 be withdrawn.

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In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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